

# PATENT COOPERATION TREATY

# PCT

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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

|   |   |   |
|---|---|---|
| Applicant's or agent's file reference<br><b>36968/190182</b>                                    | <div style="display: flex; justify-content: space-between;"> <div><b>FOR FURTHER ACTION</b></div> <div>See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)</div> </div> |   |
| International application No.<br><b>PCT/US99/13459</b>  | International filing date (day/month/year)<br><b>15/06/1999</b>   | Priority date (day/month/year)<br><b>15/06/1999</b> |
| International Patent Classification (IPC) or national classification and IPC<br><b>H04Q7/38</b> |   |   |
| Applicant<br><b>BELLSOUTH INTELLECTUAL PROPERTY CORPORATION et al.</b>                          |   |   |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 7 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

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|---|---|
| Date of submission of the demand<br><br><b>22/05/2000</b>   | Date of completion of this report<br><br><b>10.10.2001</b>  |
| Name and mailing address of the international preliminary examining authority:<br> European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Authorized officer<br><br><b>Kreppel, J</b><br><br>Telephone No. +49 89 2399 8246 <div style="text-align: right;">  </div> |

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US99/13459

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

### Description, pages:

1-31 as originally filed

### Claims, No.:

1-31 as originally filed

### Drawings, sheets:

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US99/13459

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

|                               |      |        |      |
|-------------------------------|------|--------|------|
| Novelty (N)                   | Yes: | Claims | 1-31 |
|                               | No:  | Claims |      |
| Inventive step (IS)           | Yes: | Claims | 1-31 |
|                               | No:  | Claims |      |
| Industrial applicability (IA) | Yes: | Claims | 1-31 |
|                               | No:  | Claims |      |

2. Citations and explanations  
**see separate sheet**

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

**With respect to item V:**

**1 Prior art**

The invention relates to methods for over-the-air activation and programming of wireless units within a particular communications system and preventing the activation and programming within an unauthorized communication system (independent claims 1, 5 and 9) and a wireless unit comprising respective means to perform the methods (claim 21).

Over-the-air activation of wireless units is necessary to enable the sale of subsidized wireless units via retailers which are not bound to a specific service provider. In such cases, it has to be assured that the wireless units can only be activated by the particular service provider which has subsidized the unit. Document **D1 = WO 92 12584** discloses a method for registration of a portable unit within a communication system wherein a secret key is loaded into the portable unit during manufacture and communicated to the subscriber when purchasing it. The subscriber communicates a portable unit serial number, qualifying credentials and the secret key to the service provider e.g. via a telephone call. The data are stored in the network to be used for over-the-air registration of the portable unit. The service provider communicates a link identifier to the subscriber. When trying to be registered within the communications system, the portable unit sends a registration request to the network. The network determines if the subscriber is approved for registration and sends a registration message to the portable unit which is encrypted with the subscribers secret key.

This method of registration suffers from the disadvantage that the secret key must be communicated by the subscriber to the network. The secret key has than to be stored within the network until the registration procedure is initiated.

According to this kind of procedure, the confidence of the secret keys is threatened by verbal communication and by storing the keys in the network. The procedure is also very cumbersome for the customer.

## **2   Obj   ct**

It is therefore an object of the present invention to overcome the disadvantages of the prior art and to provide a method of over-the-air activation of a wireless unit which is easy to apply and secure.

## **3   Solution**

This is achieved by the following combination of features:

- a key is computed by encrypting an identifier of the wireless unit using a first encryption algorithm;
- a set of parameters for activating the wireless unit is sent to the wireless unit together with a verification number which is computed by encrypting the set of parameters using a second algorithm and said key;
- the wireless unit decrypts the verification number using the second algorithm;
- if the computed and received verification numbers match, the wireless unit accepts the parameters for over-the-air activation.

The inventive concept is based on the fact that the key for authentication of the over-the-air activation is computed by an algorithm. In this way, the key associated to a wireless unit must neither be entered into the device, communicated between the subscriber and the network nor be stored in a network entity. The Electronic Serial Number (ESN) can eg. be used as identifier. Since this identifier is unique and only known to the device itself and to the service provider selling the device, it would never be used by a another service provider for activating the wireless unit.

#### **4 Conclusions**

The inventive concept is neither anticipated nor rendered obvious by the prior art at hand.

The subject-matter of independent **claims 1, 5, 9 and 21** therefore meets the requirements of Article 33 (2) and (3) PCT regarding novelty and inventive step. **Claims 2 to 4, 6 to 8, 10 to 20 and 22 to 31** are dependent on claims 1, 5, 9 and 21 and therefore also novel and inventive.

#### **With respect to item VII:**

- 1 The abbreviation "SD\_S" used in parenthesis (page 9, line 28, page 10, lines 2) should apparently be replaced with "SSD\_S" (shared secret data subsidy).
- 2 The features of the claims shall be provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

#### **With respect to item VIII:**

- 1 According to the description, one of the objects of the invention is to avoid storing of a correlation table including identification numbers of wireless units and associated secret keys within the network (page 16, lines 22 to 28). This is achieved by sending a request for over-the-air registration from the wireless unit to the network including the identification number of the wireless unit (page 27, lines 23 to 29). The network can thus determine the key using the key algorithm and use the key subsequently to generate a verification number.

Since independent **claims 1, 5, 9 and 21** do not contain this feature, they do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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- 2 The term "relatively" used in **claims 13, 16 and 21** is vague and unclear and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claims unclear (Article 6 PCT).
- 3 Although **claims 1, 5 and 9** have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and in respect of the terminology used for the features of that subject-matter. The claims as a whole do not meet the requirements of Article 6 (conciseness) and Rule 6.1(a) (reasonable number of claims) PCT. The application is such that a single independent method claim followed by a reduced number of dependent claims would appear appropriate.